

DIRECT TESTIMONY AND EXHIBIT OF

PHILIP HAYET

ON BEHALF OF

THE SOUTH CAROLINA OFFICE OF REGULATORY STAFF

DOCKET NO. 2019-227-E

IN RE: SOUTH CAROLINA ENERGY FREEDOM ACT (HOUSE BILL 3659)

PROCEEDING RELATED TO S.C. CODE ANN. SECTION 58-37-40

INTEGRATED RESOURCE PLANS FOR LOCKHART POWER COMPANY

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND OCCUPATION.

A. My name is Philip Hayet, and I am a Vice President and Principal of J. Kennedy and Associates, Inc. ("Kennedy and Associates"). My business address is 570 Colonial Park Drive, Suite 305, Roswell, Georgia, 30075.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I received a Bachelor of Science degree in Electrical Engineering from Purdue University, and a Master of Science degree from the Georgia Institute of Technology, with a specialization in Power Systems Analysis. I have over forty (40) years of experience in the electric utility industry, having worked in the areas of resource planning, economic analysis, generation operations, rate analysis, and utility policy analysis. I was employed from 1979 to 1996 by Energy Management Associates ("EMA", now known as ABB Enterprise Software, Inc.), and I supported that vendor's PROMOD IV™ ("PROMOD") and STRATEGIST clients.¹ In 1996, I formed Hayet Power Systems Consulting ("HPSC")

¹ PROMOD is a detailed hourly probabilistic production cost model, and STRATEGIST is a long-term resource optimization planning model.

1 where I offered consulting services to clients in the United States and internationally. In
2 2000, I continued to work for HPSC, but I also joined the Kennedy and Associates' firm.
3 In 2015, HPSC and Kennedy and Associates merged, and I became a Principal of Kennedy
4 and Associates. I have testified as an expert witness in about a hundred cases in states
5 across the United States, including Georgia, Indiana, Kentucky, Louisiana, Minnesota,
6 South Carolina, Utah, Wisconsin, Wyoming, and at the Federal Energy Regulatory
7 Commission ("FERC"). A summary of my education, experience, and expert testimony
8 appearances is included in Exhibit PH-1.

9 **Q. ON WHOSE BEHALF DO YOU PROVIDE THIS TESTIMONY?**

10 **A.** I am providing this testimony on behalf of the South Carolina Office of Regulatory
11 Staff ("ORS").

12 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC SERVICE**
13 **COMMISSION OF SOUTH CAROLINA ("COMMISSION")?**

14 **A.** Yes, I recently testified in Dominion Energy South Carolina, Inc.'s 2020 IRP
15 proceeding (Docket No. 2019-226-E). In addition, I have testified in numerous cases
16 before eight (8) state regulatory commissions and the FERC on similar issues as I am
17 addressing in this case.

18 **Q. PLEASE DESCRIBE THE PURPOSE OF YOUR TESTIMONY.**

19 **A.** The purpose of my testimony is to describe Kennedy and Associates' review of
20 Lockhart Power Company ("LPC" or "Company") 2020 Integrated Resource Plan ("LPC
21 IRP"), which included an assessment of whether the Company complied with the statutory
22 requirements of S.C. Code Ann. Section 58-37-40 ("Section 40"), as amended by the South
23 Carolina Energy Freedom Act ("Act 62").

I worked closely with the ORS team, including Mr. Anthony Sandonato and others, and my colleague, Mr. Wyrobeck, and other consultants at Kennedy and Associates. We prepared a report entitled, “Review of Lockhart Power Company’s 2020 Integrated Resource Plan” (the “Report”), which includes our findings, conclusions, and recommendations. A copy of the Report is attached to ORS witness Anthony Sandonato’s Direct Testimony as Exhibit AMS-1. Mr. Wyrobeck also filed direct testimony in this proceeding and discusses his responsibilities in his direct testimony.

Q. PLEASE DESCRIBE THE SCOPE OF KENNEDY AND ASSOCIATES’ REVIEW OF LPC’S IRP.

A. Kennedy and Associates performed a comprehensive review of the Company’s IRP filing, and evaluated whether LPC complied with the requirements of Section 40. As part of the review, Kennedy and Associates investigated the historical context of the IRP process in South Carolina, including the Act 62 requirements, prior Company IRP filings, as well as other regulatory filings, and Commission precedents. Kennedy and Associates reviewed all of the significant features of LPC’s IRP and supporting documentation, including information about generation resources, peak and energy forecasts, and LPC’s resource plan.

Q. PLEASE PROVIDE A BRIEF SUMMARY OF THE CONCLUSIONS THAT WERE REACHED.

A. ORS concluded that the Company did not meet all of the requirements of Act 62, particularly the requirement to include “several resource portfolios developed with the purpose of fairly evaluating the range of demand-side, supply-side, storage, and other

technologies and services available to meet the utility's service obligations."² The only plan reflected in the LPC IRP is the system as it currently exists, without consideration of the upcoming expiration of sales contracts for certain renewable resources, of the addition of new renewable resources, and alternatives to its full requirements contract with Duke Energy Carolinas, LLC ("DEC"). ORS's overall conclusion is that LPC did not fully comply with the Section 40 IRP amendments in Act 62.

Q. WHAT REASONS DID THE COMPANY PROVIDE FOR NOT ADDRESSING ALL OF THE REQUIREMENTS IN THE IRP STATUTE?

A. The Company believes that because of its full requirements power purchase agreement ("PPA") with DEC, it is in a unique position compared to other utilities, and therefore, it does not believe it should have to provide all of the information required by the statute. The Company explained this in response to discovery:³

...the fact that the Company has a full requirements contract has major implications related to its IRP. The traditional IRP process includes extensive analysis related to determining an optimal generation resource mix, and deciding when and where to site the generation resources, all in the context of ensuring sufficient generation resources are available under various failure scenarios with an adequate reserve margin to guarantee very reliable service.

ORS does not believe that the contractual relationship with DEC relieves the Company of the statutory requirement to evaluate resource alternatives. The decision of whether the PPA should be continued does affect this IRP as a decision to renew the contract will have to be made several years prior to 2028 when the contract expires, which is within the fifteen (15) year IRP planning horizon. It is not a requirement that final decisions be made at the time an IRP is performed; however, it is incumbent on the

² S.C. Code Ann. § 58-37-40(B)(1)(e).

³ ORS AIR 2-4.

Company to evaluate important issues early and present alternatives in a transparent way so that the Commission and customers are aware of the issues that will confront the Company in the future.

Q. PLEASE CHARACTERIZE THE RECOMMENDATIONS IDENTIFIED IN THE REPORT.

A. The Report includes a series of recommendations that relate to the Company's compliance with Section 40; specifically, it addresses energy and peak load forecast, development of resource portfolios, discussion of demand-side management ("DSM") programs, development of fuel price sensitivities, economic analyses, and other items that should be included in the Company's IRP report. The recommendations are separated into two categories. The first, consists of recommendations ORS believes should be addressed now within the context of this IRP proceeding (designated with an "N"), and the second consists of recommendations ORS believes could be addressed over a longer term (designated with an "L" in the report), such as by the next IRP update in 2021, but no later than the next comprehensive IRP in 2023.

Q. PLEASE PROVIDE THE SPECIFIC RECOMMENDATIONS YOU IDENTIFIED IN THE REPORT THAT SHOULD BE ADDRESSED IN THE FORM OF A MODIFIED IRP IN THIS PROCEEDING.

A. The recommendations are included in the following table. The numbers correspond to the same recommendations that are found in the list in the Executive Summary section of the Report.

Item	Recommendations for this IRP
1	The Company should develop long-term forecasts of sales and peak demand under various reasonable scenarios, which typically include low, medium, and high forecasts. 40(B)(1)(a)
3	The Company should develop several resource portfolios (low, medium, and high) to evaluate the range of demand-side, supply-side, storage and other technologies available to meet its load requirements. 40(B)(1)(b) and 40(B)(1)(e)
4	The Company should include a more detailed discussion of DSM in its IRP, including the historically achieved and projected energy and peak impacts. 40(B)(1)(e)(i) and 40(B)(1)(i)
5	The Company should include an evaluation of low, medium, and high fuel prices and environmental regulations (primarily CO ₂ costs) in order to evaluate its DEC PPA costs. 40(B)(1)(e)(iii)
6	The Company should develop a method of conducting resource evaluations as part of its IRP to compare its proposed plan to other reasonable options under different load, fuel, and risk sensitivities. This is necessary in order to compare net benefits of different resource plans. 40(B)(1)(g), and 40(B)(1)(h)

- 1 **Q. PLEASE PROVIDE A LIST OF SPECIFIC RECOMMENDATIONS THAT YOU**
2 **IDENTIFIED IN THE REPORT THAT SHOULD BE ADDRESSED AS SOON AS**
3 **POSSIBLE, SUCH AS IN THE IRP UPDATE IN 2021, BUT NO LATER THAN**
4 **THE NEXT COMPREHENSIVE IRP IN 2023.**
- 5 **A. The recommendations are included in the following table.**

Item	Recommendations for a Future IRP
2	The Company should improve its forecasting methodology. This includes developing documentation describing the energy and peak load forecast methodology and performing a statistically based analysis that uses historical LPC sales and load data, together with weather data to develop long term projections.
7	The Company should develop a three (3) year action plan that identifies all actions the Company intends to take in order to implement its IRP.
8	The Company should conduct analyses of the DEC PPA contract renewal.
9	The Company should consider the benefits of conducting a competitive solicitation process to evaluate alternatives to the DEC full requirements contract.
10	The Company should conduct analyses to determine if it should continue to sell some of its owned resources to another party, or if customers would be better off if those resources were used to serve native load.

1 Q. WHAT WERE YOUR PRIMARY RESPONSIBILITIES WITH REGARD TO THE
2 REPORT?

3 A. I had the primary responsibility for developing the following sections:

- 4 • Executive Summary
- 5 • Evolution of the IRP Process in South Carolina
- 6 • Compliance with Section 40 Statutory Requirements
- 7 • Evaluation of LPC's IRP (specifically the following sections):
 - 8 ○ Load and Energy Forecasting
 - 9 ○ Demand-Side, Supply-Side, Storage and other Technologies
 - 10 ○ Short Term Action Plan
 - 11 ○ Analyses to Perform as Part of the IRP

Q. PLEASE SUMMARIZE YOUR CONCLUSIONS REGARDING LOAD AND ENERGY FORECASTING.

A. I reviewed the Company's sales and peak demand forecast and identified two concerns. First, the Company did not develop long-term forecasts of sales and peak demand under various reasonable scenarios as required by Section 40(B)(1)(a). The Company developed a forecast for its base assumptions only. Second, I determined that the Company assumed a 1.0% annual growth rate in its forecasts, and I determined the Company's assumption is not supported by the actual sales and peak demand growth rates that occurred during the past five (5) years. Furthermore, the Company's sales and peak demand forecasts are not based on any type of statistical analysis of historic data and customer behavior and does not account for weather effects. It is important to recognize that the consequences of any forecast errors that may arise will affect economic analyses that the Company will have to perform such as the extension of the DEC PPA contract that expires in 2028.

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS REGARDING LOAD AND ENERGY FORECASTING.

A. I recommend that in order to comply with Section 40(B)(1)(a), the Company should, in this IRP, derive long-term forecasts of sales and peak demand under various reasonable scenarios, which typically would include low, medium, and high forecasts. In addition, I recommend that the Company should improve its forecasting methodology and provide documentation in an IRP report describing the improved methodology. It is understandable that the Company may require additional time to investigate improved load forecasting techniques. This investigation should be completed as soon as possible, such

as by the next IRP Update in 2021, but no later than by the next comprehensive IRP in 2023.

Q. PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS REGARDING DEMAND-SIDE, SUPPLY-SIDE, STORAGE AND OTHER TECHNOLOGIES.

A. First, the Company did not conduct evaluations in its IRP of low, medium, and high levels of these resources that could be used to meet some of LPC's load requirements, as required by Sections 40(B)(1)(b) and 40(B)(1)(e) of the IRP Statute. I recommend that the Company address this issue in this IRP by developing several resource portfolios (low, medium, and high) to evaluate the range of demand-side, supply-side, storage and other technologies available (primarily solar resources) that could be used to meet some of the Company's load requirements.

Second, although the Company described the existing DSM programs that it has already implemented, which are primarily demand response programs, it provided limited information regarding energy efficiency programs. The only discussion the Company included about energy efficiency was in Section 17 of the IRP Report, which stated:

LPC gives attention to capturing lost-opportunity resources which include cost-effective energy efficiency savings such as in new construction, renovation, and in routine replacement of existing equipment. In routine replacement of any and all equipment, LPC includes energy and efficiency savings as a component of evaluation.

The Company provided no information about historical or projected impacts of the Company's demand response and energy efficiency measures, as typically discussed in IRP Reports, nor did the Company conduct any evaluations of any potential new demand response or energy efficiency measures to determine if those measures could potentially lead to lower system costs and lower customer bills, as required by Section 40(B)(1)(e)(i).

I recommend that the Company include a more detailed discussion of DSM in this IRP, including the historically achieved and projected energy and peak demand impacts.

Q. PLEASE DISCUSS YOUR CONCLUSIONS AND RECOMMENDATIONS REGARDING THE SHORT TERM ACTION PLAN.

A. The statutory requirements of Section 40 do not mandate that a utility include a Short Term Action Plan in its IRP Report, however, in my experience, it is typical that most utility IRP reports do include such a plan. For example, DEC recently filed its 2020 IRP, and indicated that its Short Term Action Plan includes accomplishments that occurred over the past year and actions that it plans to take over the next five years. Action plans typically include important steps necessary to carry out supply-side, demand-side, and other plans as identified in the IRP, including any studies to be performed and filings to be made. The Short Term Action Plan also typically identifies a timeline when the actions will be carried out. I recommend that the Company include a Short Term Action Plan in its next IRP, and since the IRP statute is performed over a three (3) year schedule, the Short Term Action Plan should cover that period of time.

Q. PLEASE DISCUSS YOUR CONCLUSIONS AND RECOMMENDATIONS REGARDING OTHER ANALYSES THE COMPANY SHOULD PERFORM IN ITS IRP.

A. In addition to studying new technology options, particularly solar and battery storage, and additional DSM, the Report discusses two other important analyses that the Company should perform as part of its IRP. These include: 1) evaluation of the DEC full requirements PPA contract renewal, and 2) evaluation of the LPC renewable resource energy sales PPA contracts renewals. With regard to the DEC PPA contract, Company

1 witness Stone explained in his testimony “....that several years before the expiration of the
2 current PPA term in 2028, Lockhart will investigate whether there are better options
3 available for obtaining wholesale power on a full requirements basis.”⁴ This is an
4 important analysis that should be evaluated in the context of the IRP. The study will require
5 accurate projections of sales and peak demand forecasts, and reasonable assumptions about
6 projected DEC PPA costs and costs from other potential suppliers. In addition, this study
7 should consider whether some portion of the Company’s requirements could come from a
8 partial requirements contract and some from the acquisition of new owned renewable solar
9 and battery resources or purchases from an independent power producer. The study must
10 consider reliability impacts to ensure that LPC’s system continues to meet all reliability
11 standards. I understand that the Company may require additional time to conduct this type
12 of study, and therefore, recommend that this investigation be completed as soon as
13 possible, such as by the next IRP Update in 2021, but no later than by the next
14 comprehensive IRP in 2023.

15 The second study that should be performed is an evaluation of renewable resources
16 that the Company currently owns and that are included in its rate base, but are sold to
17 another party under power purchase agreements. Since customers are paying for those
18 assets through rates, the Company assigns all sales revenues from those resources to retail
19 customers. Currently, there are four contracted resources, and when their contracts expire,
20 the Company will have to decide whether it should renew those contracts or serve native
21 load customers with the resources. The evaluation of whether to renew the contracts should
22 be included in the context of an IRP analysis, and once again, I recommend that this

⁴ Direct Testimony of Bryan Stone, at p. 9, 11.

evaluation be completed as soon as possible, such as by the next IRP Update in 2021, but no later than by the next comprehensive IRP in 2023.

Q. DO YOU HAVE ANY OTHER RECOMMENDATIONS?

A. Yes, with regard to the DEC PPA contract renewal evaluation, the Company should consider the benefits of conducting a competitive solicitation process to evaluate alternatives to the DEC full requirements contract. This is an approach that one other utility I am aware of that has a full requirements contract has taken. The utility is a cooperative electric utility in Louisiana named 1803 Electric Cooperative, Inc (“1803”). 1803 is a member-owned electric cooperative whose members currently have full-requirements wholesale power supply contracts that will expire in 2025. The members are evaluating alternatives based on a competitive solicitation process. There are differences between 1803 and LPC, including the fact that 1803 is a member of the MISO regional transmission organization, and 1803, while considered a small electric utility (840 MW peak), is still larger than LPC. Regardless, the Company should still explore whether benefits could be achieved by conducting a competitive solicitation process.

Q. WILL YOU UPDATE YOUR DIRECT TESTIMONY BASED ON INFORMATION THAT BECOMES AVAILABLE?

A. Yes. ORS fully reserves the right to revise its recommendations via supplemental testimony should new information not previously provided by the Company, or other sources, becomes available.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

QUALIFICATIONS OF PHILIP HAYET

EDUCATION/CERTIFICATION

M.S., Electrical Engineering, Georgia Institute of Technology, 1980
B.S., Electrical Engineering, Purdue University, 1979
Cooperative Education Certificate, Purdue University, 1979

PROFESSIONAL AFFILIATIONS

National Society of Professional Engineers
Georgia Society of Professional Engineers
Institute of Electrical and Electronic Engineers

EXPERIENCE

After completing his master's degree, Mr. Hayet worked for fifteen years at Energy Management Associates, now Ventyx, providing consulting services and client service support to electric utility companies for the widely used planning models, PROMOD IV and STRATEGIST. Mr. Hayet had an instrumental role in designing some of the modeling features of those tools including the competitive market modeling logic in STRATEGIST.

In 1996, Mr. Hayet formed the utility consulting firm, Hayet Power Systems Consulting ("HPSC"), and worked for clients in the United States, and internationally in Australia, Japan, Singapore, Malaysia, the United Kingdom, and Vietnam. Mr. Hayet's expertise covers a number of areas including utility system planning and operations, RTO analysis, market price forecasting, Integrated Resource Planning, renewable resource evaluation, transmission planning, demand-side analysis, and economic analysis.

In 2000, Mr. Hayet also joined the consulting firm of J. Kennedy & Associates, Inc. ("Kennedy and Associates") and assisted on projects that required utility resource planning, analysis, and software modeling expertise. Mr. Hayet merged his firm and became a Vice-President and Principal of Kennedy and Associates in 2015. Mr. Hayet has provided consulting services to Public Utility Commissions, Regional Power Pools, State Energy Offices, Consumer Advocate Offices, Global Power Developers, and Industrial Companies.

Mr. Hayet has conducted numerous consulting studies in the areas of RTO Cost/Benefit Analysis, Renewable Resource Evaluation, Renewable Portfolio Standards Evaluation, Electric Market Price Forecasting, Generating Unit Cost/Benefit Analysis, Integrated Resource Planning, Demand-Side Management, Load Forecasting, Rate Case Analysis and Regulatory Support.

QUALIFICATIONS OF PHILIP HAYET

2000 to **J. Kennedy and Associates, Inc.**
Present: **Vice President and Principal**

- Initially began as Director of Consulting, became Vice President and Principal in 2015
- Managed electric related consulting projects.
- Responsible for business development.
- Clients include Staffs of Public Utility Commissions and other State Agencies, State Energy Offices, Global Power Developers, and Industrial Groups, and large energy users.

1996 to **Hayet Power Systems Consulting**
Present: **President and Principal**

- Managed electric utility related consulting projects
- Clients include Staffs of Public Utility Commissions and other State Agencies, State Energy Offices, Global Power Developers, and Industrial Groups, and large energy users.

1991 to **EDS Utilities Division, Atlanta, GA (Now Ventyx)**
1996: **Lead Consultant, STRATEGIST Department**

- Managed a client services software team that supported approximately 75 users of the STRATEGIST electric utility strategic planning software.
- Participated in the development of STRATEGIST's competitive market modeling features and the Network Economy Interchange Module
- Provided client management direction and support and developed new consulting business opportunities.
- Performed system planning consulting studies including integrated resource planning, DSM analysis, marketing profitability studies, optimal reserve margin analyses, etc.
- Based on experience with PROMOD IV, converted numerous PROMOD IV databases to STRATEGIST, and performed benchmark analyses of the two models.

1988 to **Energy Management Associates (EMA), Atlanta, GA**
1991: **Manager, Production Analysis Department**

- Served as Project Manager of a database modeling effort to create an integrated utility operations and generation planning database. Database items were automatically fed into PROMOD IV.

EXHIBIT PH-1
Page 3 of 14

QUALIFICATIONS OF PHILIP HAYET

- Supervised and directed a staff of five software developers working with a 4GL database programming language.
- Interfaced with clients to determine system software specifications, and provide ongoing client training and support

1980 to Energy Management Associates (EMA), Atlanta, GA
1988: Senior Consultant, PROMOD IV Department

- Provided client service support to EMA's base of over 70 electric utility customers using the PROMOD IV probabilistic production cost simulation software.
- Provided consulting services in a number of areas including generation resource planning, regulatory support, and benchmarking.

TESTIMONY AND EXPERT WITNESS APPEARANCES

Date	Case	Jurisdiction	Party	Utility	Subject
09/98	97-035-01	UT	Utah Committee for Consumer Services	PacifiCorp	Utah jurisdictional Net Power Costs, PacifiCorp Rate Case Proceeding
07/01	01-035-01	UT	Utah Committee for Consumer Services	PacifiCorp	Utah Jurisdictional Net Power costs in General Rate Case
2001	ER00-2854-000	FERC	Louisiana Public Service Commission	Entergy	Proposed System Agreement Modifications
07/02	02-035-002	UT	Utah Committee for Consumer Services	PacifiCorp	Special contract for industrial consumer
2002/ 2003	U-25888	LA	Louisiana Public Service Commission	Entergy	Investigation of retail issues related to the System Agreement
2003	U-27136 Subdocket A	LA	Louisiana Public Service Commission Staff	Entergy	Aging gas steam-fired retirement study
07/03	EL01-88-000	FERC	Louisiana Public Service Commission	Entergy	Rough production cost equalization proceeding

J. Kennedy and Associates, Inc.

EXHIBIT PH-1
Page 4 of 14

QUALIFICATIONS OF PHILIP HAYET

Date	Case	Jurisdiction	Party	Utility	Subject
05/04	03-035-14	UT	Utah Committee for Consumer Services	PacifiCorp	Development of a large QF avoided cost methodology
06/04	18687-U 18688-U	GA	Georgia Public Service Commission Staff	Georgia Power and Savannah Electric	2004 Integrated Resource Planning Studies
08/04	ER03-583-000	FERC	Louisiana Public Service Commission	Entergy	Affiliate power purchase agreements
11/04	03-035-19	UT	Utah Committee for Consumer Services	PacifiCorp	Industrial customer's request for a special economic development tariff
11/04	03-035-38	UT	Utah Committee for Consumer Services	PacifiCorp	Large QF proceeding.
03/05	03-035-14	UT	Utah Committee for Consumer Services	PacifiCorp	Concerning PacifiCorp's Schedule 38 avoided cost tariff and remaining unsubscribed capacity
07/05	03-035-14	UT	Utah Committee for Consumer Services	PacifiCorp	Concerning PacifiCorp's Schedule 38 avoided cost proceeding
12/05	04-035-42	UT	Utah Committee for Consumer Services	PacifiCorp	Net power costs in General Rate Case
04/06	05-035-54	UT	Utah Committee for Consumer Services	PacifiCorp	Certification request to expand Blundell Geothermal Power Station. Related to Mid-American Energy Holding's Acquisition of PacifiCorp
05/06	22403-U	GA	Georgia Public Service Commission Staff	Georgia Power and Savannah Electric	March 2006 fuel cost recovery filing
2006	06-35-01	UT	Utah Committee for Consumer Services	PacifiCorp	2006 rate case, net power costs
08/06	U-21453	LA	Louisiana Public Service Commission Staff	Entergy Gulf States	Jurisdictional separation.

EXHIBIT PH-1
Page 5 of 14

QUALIFICATIONS OF PHILIP HAYET

Date	Case	Jurisdiction	Party	Utility	Subject
11/06	U-25116	LA	Louisiana Public Service Commission Staff	Entergy Louisiana	Fuel adjustment clause filings
01/07	23540-U	GA	Georgia Public Service Commission Staff	Georgia Power	November 2005 fuel cost recovery filing
04/07	07-035-93	UT	Utah Committee for Consumer Services	PacifiCorp	General Rate Case
06/07	24505-U	GA	Georgia Public Service Commission Staff	Georgia Power	2007 Integrated Resource Planning
10/07	U-30334	LA	Louisiana Public Service Commission Staff	Cleco Power	2008 Short-Term RFP
04/08	26794-U (FCR-20)	GA	Georgia Public Service Commission Staff	Georgia Power	Fuel cost recovery filing
2008	6630-CE-299	WI	Wisconsin Industrial Energy Group, Inc.	WEPCO	Certification Proceeding for environmental upgrades at Oak Creek power plant
07/08	ER07-956	FERC	Louisiana Public Service Commission	Entergy	2006 rough production cost equalization compliance filing in the System Agreement case
09/08	6680-CE-180	WI	Wisconsin Industrial Energy Group, Inc.	Wisconsin Power and Light	Certification proceeding concerning Nelson-Dewey coal-fired generating unit
11/08	08-1511-E-GI	WV	West Virginia Energy Users Group	Allegheny Power	Fuel cost recovery filing
12/08	27800-U	GA	Georgia Public Service Commission Staff	Georgia Power	Vogtle 3 and 4 nuclear unit certification proceeding
2008	08-035-35	UT	Utah Committee for Consumer Services	PacifiCorp	Chehalis Combine Cycle Power Plant based on a waiver of the RFP solicitation process certification proceeding
07/09	ER08-1056	FERC	Louisiana Public Service Commission	Entergy	2007 rough production cost equalization compliance filing in the System Agreement case

EXHIBIT PH-1
Page 6 of 14

QUALIFICATIONS OF PHILIP HAYET

Date	Case	Jurisdiction	Party	Utility	Subject
07/09	U-30975	LA	Louisiana Public Service Commission Staff	SWEPSCO and Cleco	Application to acquire the Oxbow Mine to supply Dolet Hills Power Station certification proceeding
09/09	E015/PA-09-526	MN	Large Power Intervenors	Minnesota Power	Request for approval to purchase Square Butte's 500 kV DC transmission line, restructure a coal based power purchase agreement
09/09	09-035-23 Direct	UT	Utah Office of Consumer Services	PacifiCorp	2009 rate case, net power costs
10/09	09A-415E	CO	Public Utilities Commission of Colorado	Black Hills/Colorado	CPCN application to construct two LMS 100 natural gas combustion turbine units
10/09	09-035-23 Surrebuttal	UT	Utah Office of Consumer Services	PacifiCorp	2009 rate case, net power costs
12/09	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	First Semi-Annual Vogtle Construction Monitoring Report
12/09	ER08-1224	FERC	Louisiana Public Service Commission	Entergy	2008 production costs used to develop bandwidth payments
2009	09-2035-01	UT	Utah Office of Consumer Services	PacifiCorp	2008 IRP
01/10	28945-U	GA	Georgia Public Service Commission Staff	Georgia Power	Fuel cost recovery filing
2010	EL09-61	FERC	Louisiana Public Service Commission	Entergy	System Agreement, individual operating company sales
06/10	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	Second Semi-Annual Vogtle Construction Monitoring Report
12/10	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	Third Semi-Annual Vogtle Construction Monitoring Report
01/11	ER09-1350 Direct	FERC	Louisiana Public Service Commission	Entergy	2008 production costs used to develop bandwidth payments

EXHIBIT PH-1
Page 7 of 14

QUALIFICATIONS OF PHILIP HAYET

Date	Case	Jurisdiction	Party	Utility	Subject
02/11	ER09-1350 Cross- Answering	FERC	Louisiana Public Service Commission	Entergy	2008 production costs used to develop bandwidth payments
04/11	33302-U (FCR-22)	GA	Georgia Public Service Commission Staff	Georgia Power	Fuel cost recovery filing
06/11	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	Fourth Semi-Annual Vogtle Construction Monitoring Report
09/11	U-31892	LA	Louisiana Public Service Commission Staff	Cleco Power	Settlement agreement, CPCN to upgrade Madison 3 coal unit to accommodate biomass fuel
11/11	26550-U	GA	Georgia Public Service Commission Staff	Georgia Power	Reacquisition of wholesale block capacity
11/11	34218-U	GA	Georgia Public Service Commission Staff	Georgia Power	Decertification of two aging coal units, acquire PPA resources, approve IRP update
12/11	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	Fifth Semi-Annual Vogtle Construction Monitoring Report
03/12	U-32148	LA	Louisiana Public Service Commission Staff	Entergy	Change of Control Proceeding to move to Midwest ISO
2012	20000-EA- 400-11	WY	Wyoming Industrial Energy Consumers	Rocky Mountain Power	Certification of environmental upgrades at Naughton 3
05/12	35277-U (FCR-23)	GA	Georgia Public Service Commission Staff	Georgia Power	Fuel cost recovery filing
05/12	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	Sixth Semi-Annual Vogtle Construction Monitoring Report
07/12	2012- 00063	KY	Kentucky Industrial Utility Customers, Inc.	Big Rivers	Environmental upgrades in compliance with MATS and CSAPR

EXHIBIT PH-1
Page 8 of 14

QUALIFICATIONS OF PHILIP HAYET

Date	Case	Jurisdiction	Party	Utility	Subject
09/12	U-32275	LA	Louisiana Public Service Commission Staff	Dixie Electric Member Cooperative	Ten year power supply acquisition certification proceeding
12/12	EL09-61-002 Direct	FERC	Louisiana Public Service Commission	Entergy	Harm calculation, violation of System Agreement
12/12	U-32557	LA	Louisiana Public Service Commission Staff	Entergy	Certification of 28 MW PPA for renewable energy capacity (RAIN waste heat) in accordance with LPSC's Renewable Energy Pilot
12/12	U-29764	LA	Louisiana Public Service Commission Staff	Entergy	Retail proceeding regarding termination of cross-PPAs
12/12	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	Seventh Semi-Annual Vogtle Construction Monitoring Report
03/13	EL09-61-002 Cross-Answering	FERC	Louisiana Public Service Commission	Entergy	Harm calculation, violation of System Agreement
04/13	2012-00578	KY	Kentucky Industrial Utility Customers, Inc.	Kentucky Power Company	Mitchell Certificate of Public Convenience and Necessity
05/13	36498-U	GA	Georgia Public Service Commission Staff	Georgia Power	2013 IRP and request to decertify over 2,000 MW of coal-fired capacity
07/13	U-32785	LA	Louisiana Public Service Commission Staff	Entergy	8.5 MW PPA for renewable energy capacity (Agrilelectric rice hull) in accordance with LPSC's Renewable Energy Pilot
08/13	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	Eighth Semi-Annual Vogtle Construction Monitoring Report
10/13	2013-00199	KY	Kentucky Industrial Utility Customers, Inc.	Big Rivers	Base rate case
05/14	13-035-184	UT	Utah Office of Consumer Services	PacifiCorp	2014 General Rate Case, net power cost

EXHIBIT PH-1
Page 9 of 14

QUALIFICATIONS OF PHILIP HAYET

Date	Case	Jurisdiction	Party	Utility	Subject
06/14	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	Ninth/Tenth Semi-Annual Vogtle Construction Monitoring Report
07/14	20000-446-EA-14	WY	Wyoming Industrial Energy Consumers	PacifiCorp	2014 General Rate Case, net power cost
08/14	2000-447-EA-14	WY	Wyoming Industrial Energy Consumers	PacifiCorp	2014 Energy Cost Adjustment Mechanism application
08/14	14-035-31	UT	Utah Office of Consumer Services	PacifiCorp	2014 Energy Balancing Adjustment application
09/14	ER13-432	FERC	Louisiana Public Service Commission	Entergy	Allocation of Union Pacific Settlement Agreement benefits
10/14	2014-00225	KY	Kentucky Industrial Utility Customers, Inc.	Kentucky Power	Kentucky Power Company's Fuel Adjustment Clause
12/14	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	Eleventh Semi-Annual Vogtle Construction Monitoring Report
05/15	14-035-140	UT	Utah Office of Consumer Services	PacifiCorp	Solar and wind capacity contribution avoided cost proceeding.
06/15	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	Twelfth Semi-Annual Vogtle Construction Monitoring Report
08/15	15-035-03	UT	Utah Office of Consumer Services	PacifiCorp	2015 Energy Balancing Adjustment application
09/15	14-035-114	UT	Utah Office of Consumer Services	PacifiCorp	Cost and Benefits of PacifiCorp's Net Metering Program
11/15	39638-U	GA	Georgia Public Service Commission Staff	Georgia Power	FCR-24 Fuel Cost Recovery Proceeding
11/15	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	Thirteenth Semi-Annual Vogtle Construction Monitoring Report

EXHIBIT PH-1
Page 10 of 14

QUALIFICATIONS OF PHILIP HAYET

Date	Case	Jurisdiction	Party	Utility	Subject
5/16	40161	GA	Georgia Public Service Commission Staff	Georgia Power	Georgia Power Company's 2016 IRP and Application for Decertification of Plant Mitchell Units 3, 4A, and 4B, Kraft Unit 1 CT, and Intercession City CT
6/16	29849	GA	Georgia Public Service Commission Staff	Georgia Power	Fourteenth Semi-Annual Vogtle Construction Monitoring Report
8/16	16-035-27	UT	Utah Office of Consumer Services	PacifiCorp	Renewable Energy Services Contract between Rocky Mountain Power and Facebook, Inc
8/16	16-035-01	UT	Utah Office of Consumer Services	PacifiCorp	2016 Energy Balancing Adjustment application
9/16	09-035-15	UT	Utah Office of Consumer Services	PacifiCorp	EBA Pilot Evaluation Direct Testimony
11/16	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	Fifteenth Semi-Annual Vogtle Construction Monitoring Report
11/16	09-035-15	UT	Utah Office of Consumer Services	PacifiCorp	EBA Pilot Evaluation Rebuttal Testimony
11/16	EL09-61-04	FERC	Louisiana Public Service Commission	Entergy	Violation of System Agreement, Phase III, Harm Calculation, Direct
3/17	EL09-61-04	FERC	Louisiana Public Service Commission	Entergy	Violation of System Agreement, Phase III, Harm Calculation, Rebuttal
6/17	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	Sixteenth Semi-Annual Vogtle Construction Monitoring Report
9/17	17-035-39	UT	Utah Office of Consumer Services	PacifiCorp	Approval of Resource Decision to Repower Wind Facilities, Direct
11/17	17-035-39	UT	Utah Office of Consumer Services	PacifiCorp	Approval of Resource Decision to Repower Wind Facilities, Surrebuttal
4/18	17-035-39	UT	Utah Office of Consumer Services	PacifiCorp	Approval of Resource Decision to Repower Wind Facilities, Response
4/18	17-035-39	UT	Utah Office of Consumer Services	PacifiCorp	Approval of Resource Decision to Repower Wind Facilities, Rebuttal to Response

EXHIBIT PH-1
Page 11 of 14

QUALIFICATIONS OF PHILIP HAYET

Date	Case	Jurisdiction	Party	Utility	Subject
12/17	17-035-40	UT	Utah Office of Consumer Services	PacifiCorp	Approval of Resource Decision for New Wind and New Transmission, Direct
1/18	17-035-40	UT	Utah Office of Consumer Services	PacifiCorp	Approval of Resource Decision for New Wind and New Transmission, Rebuttal
4/18	17-035-40	UT	Utah Office of Consumer Services	PacifiCorp	Approval of Resource Decision for New Wind and New Transmission, Second Rebuttal
6/18	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	Eighteenth Semi-Annual Vogtle Construction Monitoring Report
8/18	Cause 45052	IN	Indiana Coal Council	Vectren Energy Delivery of Indiana	Request for Approval of an 850 MW CCGT Plant
9/18	U-34836	LA	Louisiana Public Service Commission Staff	Entergy Louisiana, LLC	Authorization to Participate in a 50 MW Solar PPA
11/18	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	Nineteenth Semi-Annual Vogtle Construction Monitoring Report
1/19	U-35019	LA	Louisiana Public Service Commission Staff	Entergy Louisiana	Authorization to Make Available Experimental Renewable Option and Rate Schedule RTO
4/19	42310-U	GA	Georgia Public Service Commission Staff	Georgia Power	Georgia Power's 2019 IRP Proceeding
11/19	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	Twenty/Twenty-First Semi-Annual Vogtle Construction Monitoring Report
5/20	43011-U	GA	Georgia Public Service Commission Staff	Georgia Power	Georgia Power Fuel Cost Recovery Application (FCR-25)
6/20	29849-U	GA	Georgia Public Service Commission Staff	Georgia Power	Twenty-Second Semi-Annual Vogtle Construction Monitoring Report
9/20	17-035-61	UT	Utah Office of Consumer Services	PacifiCorp	Approval of an Export Credit Rate for Customer Generators (Primarily Rooftop Solar)

QUALIFICATIONS OF PHILIP HAYET

Date	Case	Jurisdiction	Party	Utility	Subject
10/12	2019-226-E	SC	South Carolina Office of Regulatory Services	Dominion Energy South Carolina	Review of DESC's 2020 IRP

ADDITIONAL JUDICIAL PROCEEDINGS AND OTHER PROJECT INFORMATION

- 1995 – 2000 - Modeled the Singapore Power Electricity System and analyzed the benefits of dispatching a new oil-fired unit within the system, BHP Power
- 1995 – 2000 - Modeled the Australian National Energy Market to develop market based energy price forecasts on behalf of an Independent Power Producer in Australia, BHP Power
- 1995 – 2000 - Analyzed the benefit of purchasing existing gas-fired steam turbine units within the Australian market, BHP Power
- 1995 – 2000 Developed market price forecasts for South Australia as part of the evaluation of a new gas fired combined cycle unit, BHP Power
- 1995 – 2000 - Modeled the Vietnam Electricity System as part of a project to develop Least Cost Expansion plans for Vietnam, EVN State Utility
- 1995 – 2000 - Assisted in the evaluation of Phu My CCGT power plant in Vietnam, BHP Power
- 1995 – 2000 - Assisted in the development of Market Price Forecasts in several regions of the US. These forecasts were used as the basis for stranded cost estimates, which were filed in testimony in a number of jurisdictions across the country.
- 1995 – 2000 - Conducted research regarding ISO Tariffs and Operations for the PJM Power Pool, the California ISO, and the Midwest ISO on behalf of a Japanese Research.
- 1995 – 2000 - Performed research on numerous electric utility issues for 3 Japanese research organizations. This was primarily related to deregulation issues in the US in anticipation of deregulation being introduced in Japan.
- 1995 – 2000 - Critiqued the IRP filings of 5 utilities in South Carolina on behalf of the South Carolina State Energy Office
- 1999 - Helped to analyze the rate structure and develop an electricity price forecast for the Metropolitan Atlanta Rapid Transit Authority (MARTA) in Atlanta, Georgia
- August 2002 – Expert Report, Civil Action No. 1:00-cv-1262 in the United States District Court for the Middle District of North Carolina, United States v. Duke Energy Corporation, Department of Justice

QUALIFICATIONS OF PHILIP HAYET

- 2002 - Worked on behalf of the Utah Committee of Consumer Services to provide guidance and assist in the analysis of PacifiCorp's 2002 Integrated Resource Plan.
- July 2003 - Worked on behalf of the Oregon Public Utility Commission to Audit PacifiCorp's Net Power Costs per a Settlement Agreement accepted by the Public Utility Commission of Oregon in its Order No. 01-787. Audit report in Docket No. UE-116 filed July 2003.
- 2003 - Regulatory support to the Utah Committee of Consumer Services regarding PacifiCorp's 2003 Utah General Rate Case Docket # 03-2035-02.
- 2004 – Assistance to the Utah Committee of Consumer Services to analyze a series of power purchase agreements and special contracts between PacifiCorp and several of its industrial customers.
- 2005 - Worked on behalf of the Utah Committee of Consumer Services to help analyze PacifiCorp's restructuring proposals.
- 2005 - Assisted the Utah Committee of Consumer Services by evaluating PacifiCorp's 2005 IRP and assisted in writing comments that were filed with the Commission.
- 2007 - Assisted the Utah Committee of Consumer Services to evaluate PacifiCorp's 2007 IRP.
- 2007 - Conducted an investigation of the Southern Company interchange accounting and fuel accounting practices on behalf of the Georgia Public Service Commission Staff (Docket 21162-U).
- 2008 - Assisted the Louisiana Public Service Commission Staff with the review and evaluation of Cleco Power's 2008 Short Term RFP and its 2010 Long-Term RFP.
- 2008 - Assisted the Utah Committee of Consumer Services by participating in a collaborative process to develop an avoided cost tariff for large QFs.
- 2008 - Assisted the Louisiana Public Service Commission Staff with a rulemaking for the opportunity to implement a Renewable Portfolio Standard in Louisiana. (Docket No. R-28271 Sub-Docket B)
- April 2011 – Initial Expert Report, Civil Action No. 2:10-cv-13101-BAF-RSW, on behalf of the Department of Justice in US District Court, United States v. Detroit Edison
- June 2011 – Rebuttal Expert Report, Civil Action No. 2:10-cv-13101-BAF-RSW, on behalf of the Department of Justice in US District Court, United States v. Detroit Edison
- 2011 - Assisted the Georgia Public Service Commission Staff to investigate the acquisition of additional coal and combustion turbine capacity currently wholesale capacity (Docket 26550).

QUALIFICATIONS OF PHILIP HAYET

- 2012 - Assisted the Louisiana Public Service Commission Staff with a rulemaking to design Integrated Resource Planning (“IRP”) rules. (Docket No. R-30021)
- December 2013 – Expert Report, Civil action no. 4:11-cv-00077-RWS, on behalf of the Department of Justice in US District Court, United States v. Ameren Missouri.

PUBLICATIONS AND PRESENTATIONS

Co-authored “Review of EPA’s Section 111(d) CO₂ Emission Rate Goals for the State of Montana, on behalf of the Montana Large Customer Group, October 2014.

Authored “Singapore’s Developing Power Market”, which appeared in the July/August 1999 edition of Power Value Magazine

Co-authored “The New Energy Services Industry – Part 1”, which appeared in the January/February 1999 edition of Power Value Magazine.

Co-authored and Presented “Evaluation of a Large Number of Demand-Side Measures in the IRP Process: Florida Power Corporation’s Experience”, Presented at the 3rd International Energy and DSM Conference, Vancouver British Columbia, November 1994

Co-authored “Impact of DSM Program on Delmarva’s Integrated Resource Plan”, Published in the 4th International Energy and DSM Conference Proceedings, held in Berlin, Germany, 1995

Presentation – Law Seminars International, Electric Utility Rate Cases, Case Study of the Louisiana Public Service Commission’s Quick Start Energy Efficiency Program, March 2015.